DECISION NOTICE AND FINDING OF NO SIGNIFICANT IMPACT

INVASIVE SPECIES MANAGEMENT
USDA Forest Service
Shawnee National Forest, Illinois
January 2013

Decision and Reasons for the Decision

This discussion of my decision and finding of no significant impact related to implementation of the proposed action incorporates by reference the Revised Environmental Assessment of Invasive Species Management (January 2013).

Background

The purpose and need for this project is to protect and restore native ecosystems on the Shawnee National Forest (Forest) by utilizing a variety of tools for the control or elimination of populations of invasive plants and the management of 23 designated natural areas. This project addresses the harm caused by certain invasive weed species that are actively spreading in the Forest. It replaces our decades-old management approach that has not been effective at controlling invasive plants and the adverse consequences they bring to native plant populations. The Project also addresses federal policies developed over the past two decades on the prevention and eradication of invasive species. Forest-wide action is needed at this time because:

- invasive species are jeopardizing the survival of some ecological communities,
- invasive species are increasingly degrading native plant communities,
- established invasive species populations serve as a source for spreading infestations,
- taking action now averts the creation of a more widespread and costly future problem,
- existing invasive species populations can spread to adjacent lands,
- past control efforts in small areas using mostly manual methods have been only marginally effective in stopping the establishment/spread of invasive species populations,
- invasive species populations persist and continue to spread, pointing to the need for a comprehensive and integrated approach to treatment, and
- prevention of the establishment of new infestations is more effective than trying to control and eradicate entrenched infestations.

Action is needed to implement guidance in the Forest's 2006 Land and Resource Management Plan (Plan):

> The risk of damage from existing non-native invasive species should be reduced through integrated pest-management. Invasion-prevention measures should be implemented to maintain native ecosystems. Existing populations of non-native invasive species should be eradicated, controlled and/or reduced. Effects of management activities on the invasion and spread of non-native invasive species should be considered and mitigated, if needed. Natural areas and lands adjacent to natural areas have the highest priority for the prevention and control of non-native invasive species (FW34.2.1 [G], page 47.)

Invasive species problem: Monitoring and field studies document that the Forest has numerous and abundant populations of invasive plant species that pose an increasingly serious threat to plant and animal community health and diversity (EA pages 3-6). Invasive plant species, non-native and displaced from their original ranges, generally lack natural controls like disease, predators, parasites, or climate. They tend to out-compete and eventually replace native species. They can cause the loss of habitat and food for wildlife, alter soil structure and chemistry, modify fire regimes, alter plant succession, hybridize with natives to

compromise local genetic diversity, and replace and possibly lead to the local extirpation of native plant species, including threatened, endangered and sensitive species.

Our employment of integrated pest-management principles—Setting Action Thresholds, Identifying and Monitoring Pests, Prevention, and Control—for the prevention/eradication of invasive species has lacked all the tools available for responsible control. Prevention measures have been inadequate to stop the spread of the most invasive species. We have used mechanical and manual control methods with minimal success overall. As we continue to monitor and observe many areas of the Forest infested and overcome by invasives and recognize the potential loss of biodiversity and resilience caused by their establishment—as well as the real danger that some rare plant species and unique habitats will be irretrievably lost—we know the "action threshold" has been crossed.

Designated natural areas: Since 1980, the Forest has cooperated with the State of Illinois Nature Preserves Commission in protecting the last remnants of Illinois' natural heritage. The initial Illinois Natural Areas Inventory was completed in 1978 and identified the state's rarest remaining areas, a total of 1,089, 80 of which are located on the Forest. Recognizing the value of the unique biological features of these areas, the Forest designated these 80 sites as "natural areas" in the first Forest Plan (1986) and affirmed those designations in the 2006 Forest Plan (USDAFS Shawnee 2006). Today we protect these areas under the 2006 Plan's Natural Area Management Prescription (Plan page 76), which requires the protection and perpetuation of their significant and exceptional features. These features are generally ecological in nature, with unique plant and/or animal communities and habitats. However, due to a variety of reasons, most of the natural areas have not been actively managed in ten years or more, leading to the general degradation of their natural communities. Invasive plant species are encroaching on them; many limestone and sandstone barrens are reverting to forested conditions. This degradation is confirmed by field surveys and reports by IDNR that emphasize these communities require active management to maintain their integrity (IDNR 2008/February and July, 2011).

The revised environmental assessment documents the analysis of three alternatives to meet the need described above.

Decision

Based upon my review of the alternatives, I have decided to implement Alternative 2, which proposes the treatment of invasive plant infestations using an integrated combination of prescribed fire and manual, mechanical and/or chemical methods. Under this alternative, we would continue to use public information and education to increase awareness of invasive species issues. We would treat invasive plants on National Forest System lands specified in the revised environmental assessment and mapped in the project record, given available time and resources. Post-treatment monitoring would be done to evaluate success, which we would document in our annual monitoring reports. The selected alternative provides a dual approach to invasive plant species management:

1. ***Treatment Forest-wide of all known sites with four highly invasive species:*** The project interdisciplinary team reviewed the many invasive species found on the Forest and identified four as priorities to be targeted Forest-wide: Amur honeysuckle *(Lonicera maackii*), on about 720 acres at 16 sites, Chinese yam *(Dioscorea oppositifolia*), on about 340 acres at 19 sites, garlic mustard (*Alliaria petiolata*), on about 560 acres at 30 sites, and kudzu (*Pueraria montana*), on about 75 acres at 7 sites (see project record for maps of locations). For the most part, these species were chosen based on their high degree of invasiveness and/or their ability to suppress or extirpate native vegetation through their aggressive growth characteristics. Published science, monitoring, and field study indicate that active management of these species can greatly reduce both their current and potential adverse effects on native plants and animals with minimal impact on the surrounding environment. An integrated

treatment approach using manual, mechanical and, where appropriate, herbicide treatments is proposed to control and eliminate the four highly invasive species from the sites where they occur.

2. Management of 23 designated natural areas and their treatment zones: The interdisciplinary team reviewed the information on invasive species in natural areas and identified those most threatened with vigorous infestations or with the most vulnerable natural communities (EA page 12). Based on these factors, the team selected 23 high-priority natural areas for analysis (Table 1). To enable maximum protection of the selected natural areas, the team configured "treatment zones"—along streams, roads and trails, the main pathways of invasive species infestation—adjacent to and generally upstream of the areas. As detailed in EA Table 3 and Appendix A, we would target all invasive species in the natural areas and their treatment zones, following the published guidance of the Illinois Nature Preserves Commission (INPC 1990**).**

Management would include the application of prescribed fire in the natural areas and their treatment zones, about 11,220 acres. Existing fire-breaks, such as roads, trails, streams and other natural features, would be used as firelines where possible; but mechanically constructed firelines would be used where necessary. We expect to install about 14 miles of lines by hand, using leaf-blowers that cause no earth-disturbance, and 6 miles mechanically, which would be earth-disturbing. These lines would be restored promptly in accordance with the Forest Plan guidelines in Appendix F and Illinois Forestry Best Management Practices (see Table 5).

The treatment zones would be burned at intervals of 1-3 years, depending on fuel availability and the monitoring and assessment of effects to determine the need for additional fire. The fire would help restore native vegetation and set back the progression of invasive species. Further burns would be done as needed to maintain the areas' ecological integrity once invasive vegetation has been suppressed.

Table 1. High-Priority Natural Areas.

Name*	Location	Name	Location
Ava ZA	Jackson County T7.5S, R4W	Keeling Hill South EA	Hardin County T12S, R8E
Barker Bluff RNA	Hardin County T12S, R8E	Kickasola Cemetery EA	Pope County T15S, R6.5E
Bell Smith Springs EA	Pope County T11.5S, R5E	LaRue-Pine Hills RNA	Union County T11S, R3W
Bulge Hole EA	Johnson County T12S, R3E	Massac Tower Springs EA	Pope County T15S, R6.5E
Cretaceous Hills EA	Pope County T15S, R6E	Odum Tract EA	Johnson County T12S, R3E
Dean Cemetery West EA	Pope County T15S, R6E	Panther Hollow RNA	Hardin County T11S, R10E
Double Branch Hole EA	Pope County T11.5S, R5.5E.	Poco Cemetery East EA	Pope County T15S, R6.5E
Fink Sandstone Barrens EA	Johnson County T11.5S, R4E	Poco Cemetery North EA	Pope County T15S, R6.5E
Fountain Bluff GA	Jackson County T10S, R4W	Reid's Chapel EA	Saline County T10S, R5E
Hayes Creek/Fox Den EA	Pope County T11.5S, R5.5E	Russell Cemetery EA	Hardin County T10.5S, R8E
Jackson Hole EA	Pope County T11.5S, R5.5E	Snow Springs EA	Pope County T15S, R6.5E
Keeling Hill North EA	Hardin County T12S, R8E		

***** ZA=zoological area, RNA=research natural area, EA=ecological area, GA=geological area, BA=botanical area

Herbicides could be applied to control invasive species either before or after the burns, in about 675 acres of the treatment zones, depending on the species present (see EA Table 3 and Appendix A). Some species, such as grasses, grow well in response to fire and would be targeted before the burns or following, when new growth appears. Other species, such as Japanese honeysuckle and multiflora rose, are generally set back by fire, so burning them off before applying herbicides would limit the amount of herbicide required for control or eradication. We would apply herbicides as needed until infestations are controlled or eliminated.

The proposal includes thin-line application, basal-bark treatment and "hack-and-squirt" (cutting into a tree's cambium and applying herbicide), as well as the cutting and stump-spraying and/or girdling of some native trees and shrubs on about 275 acres of barrens, glades and seep-springs to improve growing conditions for the natural communities. Barrens and glades are unique native plant communities that traditionally have sparse vegetation. With the exclusion of fire, some of these areas have grown up in shrubs and trees that shade out native and sensitive plant species, limiting the diversity of the plant community. Thinning the barrens and glades helps to restore their naturally dry condition and the species adapted to it. Similarly, we would control the trees and shrubs that are encroaching on seep-spring areas and de-watering their rare plant communities.

Herbicide Use

We identified in the environmental assessment five herbicides that we would use to treat invasive species (Table 2). The characteristics of these herbicides, along with limits on rate, application method, location of application, and certification of herbicide applicators, all serve to minimize the potential for significant adverse effects.

The invasive plant treatments we propose have an inherently low risk of significant adverse effects. Monitoring is required for all herbicide treatments. We will use monitoring findings to immediately adjust treatments on the ground, if necessary, to ensure that no significant adverse effects result. Similar invasive plant control efforts in southern Illinois have not resulted in significant adverse effects on humans, or on soil, water, air, non-target plants and other resources. The nature of the herbicides used and project design criteria ensure that effects are not likely to be persistent or significant.

Further safeguard against significant adverse effects is provided by the regulatory protections of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), (7 U.S.C. 136-136y [1996]) and the Clean Water Act (CWA), (33 U.S.C. 1251 et seq. [1972]). The Project analysis and finding of no significant effects takes into account the precautions and mitigations included in these federal laws, as well as applicable state requirements. EPA evaluated and approved for use the herbicides at issue here for safe use in conformity with the labeling requirements under FIFRA. Herbicide use in this Project must comply with labeling requirements.

The herbicides we propose for use were comprehensively tested and analyzed to evaluate safety and effectiveness prior to EPA approval. The principal purpose of FIFRA is to protect human health and the environment from unreasonable adverse effects associated with herbicides. Under FIFRA, EPA registers a product only after conducting extensive scientific review of the risks and benefits of that herbicide to determine whether its use causes "unreasonable adverse effects" on human health or the environment. "Unreasonable adverse effects" include "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide"(7 U.S.C. 136[bb]). If EPA determines that an herbicide causes unreasonable adverse effects on the environment, it is subject to denial of approval, or cancellation if already registered.

This analysis of effects and finding of non-significance also took into account the protection provided by the requirements of the CWA National Pollution Discharge Elimination System (NPDES) permitting process. As stated in the environmental assessment, herbicide applications will comply with applicable permit requirements. And, as noted elsewhere, the Project incorporates substantial, proven project design criteria based on standards and requirements of the Forest Plan and the Illinois Department of Natural Resources' Forestry Best Management Practices. Implementation of the Project design criteria will provide protections above and beyond those afforded by FIFRA and CWA alone. Implementation of these criteria, taken as a whole, will minimize and mitigate the seriousness, duration, location, and intensity of any adverse effects and supports our non-significance finding.

The environmental analysis indicated that these herbicides are effective, relatively non-toxic other than to targeted plants, and minimally persistent in the environment. Our analysis indicated that the use of any of these herbicides according to the design criteria specified in the environmental assessment would have no significant adverse impact on the environment.

Issues

Following review of the scoping, the interdisciplinary team identified four key issues related to our proposal:

1. The application of herbicides may affect humans.
2. The establishment and growth of invasive species may affect natural areas and ecosystems, including plants and wildlife.
3. The application of prescribed fire and mechanical treatments may affect designated natural areas and ecosystems, including soil, water, plants and wildlife.
4. The application of herbicides may affect designated natural areas and ecosystems, including soil, water, plants and wildlife.

Table 2. Proposed Chemical Controls in Alternative 2.

Chemical Name	Examples of Trade Names	Targeted Use	Examples of invasive plants to be targeted	Risk Assessment
Clopyralid	Curtail™ Reclaim™ Transline™	Foliar spray; broadleaf selective–especially composites and legumes	kudzu, thistles, teasels, mimosa	SERA 2004a
Glyphosate	Accord® Roundup Pro® Roundup®	Stump treatment, foliar spray; non-selective; woody and broadleaf plants	Amur honeysuckle, autumn olive, kudzu, Japanese honeysuckle, garlic mustard, tree-of-heaven	SERA 2003a
Glyphosate (aquatic)	Aquamaster® Rodeo®	Foliar treatment, weeds near open water, nonselective	purple loosestrife, any species near open water	SERA 2003a
Sethoxydim	Poast® Vantage®	Foliar spray; narrowleaf selective (grasses)	Nepalese browntop, Johnson grass, cheat grass,	SERA 2001
Triclopyr	Crossbow™ Garlon™3A Garlon™4 Habitat®; Pasturegard™ Vine-X®	Stump and/or basal-bark treatment, foliar spot spray; broadleaf selective; woody plants	Amur honeysuckle, autumn olive, kudzu, Japanese honeysuckle, garlic mustard, tree-of-heaven	SERA 2003b
Picloram	Tordon K Tordon 22k; Grazon	Stump and/or basal-bark treatment	kudzu	SERA 2003c

(http://www.fs.fed.us/foresthealth/pesticide/risk.shtml)

Other Factors Considered

In reaching my decision, I have considered the science, field data and analysis in the revised environmental assessment, which was tiered to the 2006 Forest Plan programmatic final environmental impact statement and incorporated by reference the U.S. Fish and Wildlife Service's programmatic biological opinion of the Plan. The analysis also incorporated by reference the human health and ecological risk assessments of the herbicides we propose for use, which indicate the relative safety of the respective herbicides. I also

considered the experience, approach and support of the Illinois Department of Natural Resources (see Forest Plan page 22), as well as the Illinois Nature Preserves Commission, the Illinois Invasive Plant Species Council, the River-to-River Cooperative Weed Management Area and The Nature Conservancy, who have successfully used the methods we propose and endorse our proposal as necessary and practical for the control of invasive species.

Design Criteria

As with Alternative 3, Alternative 2 will allow us to treat invasives infestations with prescribed fire and manual or mechanical methods. The advantage of Alternative 2, however, is that it allows for the integrated use of selected herbicides as necessary to effectively and economically treat invasive plant species. The project interdisciplinary team reviewed Forest Service regulations, the Forest Plan, Indiana Department of Natural Resources Forestry Best Management Practices and published science and compiled comprehensive design criteria that direct implementation of the actions associated with our proposed methods of invasive species control. The nature and use of the proposed herbicides, considered together with Implementation of these criteria, ensure that the effects of our proposal are unlikely to be persistent or significant. All treatments implemented on the Forest would be done according to the specifications of the design criteria. Table 3 displays the design criteria for invasives species management and Table 4 displays the design criteria for human health and safety.

Table 3. Design Criteria for Invasive Species Management.

Resource Area	Design Criteria	Rationale / Effectiveness
Invasive Plant Treatments	Clean all equipment before entering and leaving project sites.	Minimizes spread of noxious weeds from one site to the next (USDA-FS 2004). Guide to Noxious Weed Prevention Practices (2001).
	Workers should inspect, remove and properly dispose of plant parts found on clothing and equipment before entering or leaving the project area.	
	Minimize soil disturbance to avoid creating favorable conditions that encourage weed establishment.	
	All treatment locations will be marked with global positioning systems and tracked in a database.	
	Known or new occurrences that cross ownership boundaries will be noted and data shared with landowners and other agencies.	Improves effectiveness of control and increases opportunities for treatment on other lands.
Botanical	Ensure that rare plant resources, including state-listed threatened and endangered species, are protected from mechanical or chemical treatments.	Rare plant resources will be protected and habitat enhanced. Known locations of state-listed plant species will be protected.
Wildlife	Retain all standing dead trees unless necessary to cut for human safety or to accomplish project objectives.	These design criteria are required "terms and conditions" or "reasonable and prudent measures" in US Fish and Wildlife Service Biological Opinion for the Forest Plan (Forest Plan, Appendix H, C.1.b. and C.1.c.).
	To reduce the chances of affecting bat maternity roosts and foraging habitats, no prescribed burns shall be done in upland forests from 5/1-9/1.	
	Burning near known timber rattlesnake den locations will be done only during hibernation - 11/1-3/31.	Den sites are extremely important to the maintenance of populations (Forest Plan).
	For protection of nesting migratory birds, burns should be done as early or late in the season as possible, preferably before 4/1 and after 8/1.	For the protection migratory birds (Forest Plan, FW51.1.2.6.
Wildlife	In order to protect eastern small-footed bats, fires will not be ignited near known-occupied rock outcroppings or cave entrances in the project area. No firelines would be constructed in or immediately adjacent to cave habitat.	This species require additional RFSS protection identified in the Forest Plan (USDA 2006).

Table 3. Design Criteria for Invasive Species Management.		
Resource Area	**Design Criteria**	**Rationale / Effectiveness**
	High-intensity prescribed fire should not be applied to known locations of the carinate pill snail in LaRue-Pine Hills Research Natural Area.	This is protection suggested in the conservation assessment for the carinate pill snail (Anderson 2005).
Heritage	The Area of Potential Effects will be reviewed and inventoried as needed to ensure that all heritage resources are adequately protected.	Implementing protocol methods will ensure protection of heritage resources (SHPO/IHPA 2009).
Recreation and Visual	Ensure visitor safety before, during and after burning activities. Burn areas should be closed to the public.	Forest Plan, Chap. I, B; FW23.2 & FW23.3.
	Protect recreational improvements, (campgrounds, trailheads and trail-signing).	Forest Plan, FW23.2
	Damage to trails and roads used as firebreaks or for access should be repaired to standard.	Forest Plan, Chap. FW23.3
Wilderness	Ensure non-motorized NNIS treatments are utilized.	Wilderness Act of 1964, Forest Plan WD19.3
	Avoid treatments during periods with typical high visitor volume (holidays).	Mitigate impacts on solitude.
Soil and Water	Use erosion-control measures, including seeding, for firelines that could erode soil into water resources.	Illinois Forestry Best Management Practices are designed to ensure that prescribed fire does not degrade the forested site and that waters associated with these forests are of the highest quality (IDNR et al. 2000). We have monitored the effectiveness of mitigation measures on several past prescribed fire projects and found that the measures were effective in minimizing soil erosion and subsequent sedimentation in streams.
	Avoid intense burns that remove forest-floor litter and expose excessive bare soil.	
	Maintain soil-stabilization practices until the site is fully revegetated and stabilized.	
	Avoid operating heavy equipment to cause excessive soil displacement, rutting or compaction.	
	Apply guidelines for protection of water quality and riparian areas; guidelines for the reduction of bare-soil disturbance; retain native vegetation and limit soil disturbance as much as possible.	Implementation of the protection measures and management recommendations at Forest Plan FW25 will prevent excessive sedimentation.
Soil and Water	Revegetate soils disturbed by management activities by allowing growth of existing on-site vegetation where possible and desirable or by planting or seeding native vegetation.	Adherence to Forest Plan direction and Illinois Department of natural Resources Best Management Practices regarding protection of aquatic habitats will prevent damage to these areas.
	Fueling or oiling mechanical equipment must be done away from aquatic habitats.	
	When using pesticides in riparian areas and within 100 feet of sinkholes, springs, wetlands and cave openings, adhere to the following: Minimize the use of pesticides, herbicides; use only pesticides labeled for use in or near aquatic systems; and use only herbicides based on analysis that shows they are environmentally sound and the most biologically effective method practicable.	
	No triclopyr (ester formulation) or surfactants used with glyphosate (terrestrial version) will be applied within riparian areas or within 100 feet of lakes, ponds, sinkholes or wetlands.	Compliance with herbicide label directions will prevent misuse of chemicals used for treatment of invasive species.
	Consider prevailing weather conditions and use lower volatility formulations under conditions that might result in a high risk of volatilization.	

Table 4. Design Criteria for Human Health and Safety.
Implementing safe handling and application guidelines will ensure the health and safety of employees and the public will be protected. Job Hazard Analyses (JHA), Material Safety Data Sheets (MSDS) and product labeling will be reviewed and followed in order to ensure the preservation and protection of human health and safety. Applicators will be trained in the safe handling and application of all natural and synthetic herbicides. All requirements in a Safety and Spill Plan will be followed. The following application standards will be rigorously adhered to.
Pre-application • Herbicides will be used only when they will provide the most effective control relative to the potential hazards of other proposed management techniques; choose the most effective herbicide requiring the least number of applications. • The use of pesticides must comply with the product label. • All applications will be under the direction of a certified pesticide applicator. • All individuals working with herbicides will review corresponding Material Safety Data Sheets. • Herbicide label directions will be carefully followed. This could include temporary closure of treatment areas in order to prevent or limit public exposure and insure public health and safety. • Weather forecasts will be obtained prior to herbicide treatment. Treatment will be halted or delayed, if necessary, to prevent runoff during heavy rain or high wind. Herbicide will be applied only when wind speeds are less than 10 mph, or according to label direction, to minimize herbicide drift. Appropriate protective gear will be worn by herbicide applicators.
Application •Use the lowest pressure, largest droplet size, and largest volume of water permitted by the label to obtain adequate treatment success; use the lowest spray boom and release height possible consistent with operator safety. •Apply pesticides during periods of low visitor use when possible; areas treated with pesticides shall be signed, as appropriate, to ensure users are informed of possible exposure. •When using herbicides where runoff may easily enter the water table, (i.e. creeks, rivers, wetlands, caves, sink-holes, or springs), minimize the use of pesticides, herbicides, fertilizers or hazardous materials; use only pesticides labeled for use in or near aquatic systems.
Post-Application • All herbicides will be stored in approved buildings when not in use. • Herbicides will have Material Safety Data Sheets per Forest Service guidelines. • Washing and rinsing of equipment used in the mixing and application of pesticides will be done in areas where runoff will not reach surface waters, wetlands, fens, sinkholes, or other special habitats. • Rinse water from cleaning or rinsing actions in conjunction with herbicide treatment will be disposed of according to the Federal Insecticide, Fungicide and Rodenticide Act (http://www.purdue.edu/dp/envirosoft/pest/src/container.htm). • Herbicide containers will be stored and disposed of following label specifications.

Monitoring

In addition to our use of monitoring findings to immediately adjust treatments on the ground, if necessary, to ensure there are no significant adverse effects, we will monitor our implementation of Alternative 2 in cooperation/collaboration with interested parties and the public to determine whether or not we are accomplishing expected outcomes (Table 5). If monitoring reveals unacceptable outcomes, we will implement appropriate measures to correct problems.

Table 5. Monitoring of Alternatives.

Monitoring Activity	Description	Location and Timing
Soil Resources	Visual inspection for sheet, rill and gully erosion. Inspection of soil disturbance.	Before, during and after project activities are completed in project area.
Invasive Species	Samples of project area would be surveyed to assess invasive species increase/decrease.	Selected locations would be monitored before and after implementation.
	Ensure that invasive species design criteria are implemented.	Selected locations would be monitored during and after implementation.
Rare Plant Resources	Monitor known rare plants to ensure no adverse impacts.	Selected locations would be monitored during and after implementation.

Table 5. Monitoring of Alternatives.		
Heritage Resources	Ensure that heritage resources are protected during and after implementation.	This project would be checked annually to assess damage to historic properties.

Legal and Regulatory Compliance

The analysis and implementation of Alternative 2 meet the requirements of the National Environmental Policy Act, the National Forest Management Act, the Endangered Species Act, the Clean Water Act, the Clean Air Act, the National Historic Preservation Act, the Migratory Bird Treaty Act, the Wilderness Act and the Illinois Wilderness Act and other applicable laws and regulations, executive orders, and Forest Service directives and policies.

Other Alternatives Considered

In addition to the selected alternative, I considered two other alternatives analyzed in the environmental assessment. A comparison of these can be found in the environmental assessment on page 22.

Alternative 1: No Action. Under this alternative, we would continue current invasive species management: Pulling and torching of about 100 to 150 acres of invasives, inventory and mapping of infestations and the burning of about 6,000 acres annually to set back the invasives, including in some natural areas. We apply herbicides in campgrounds and at administrative sites (about 50-100 acres per year), contributing to invasive species control in those areas. No ground-disturbing mechanical treatments could be done, nor could herbicide be applied outside of administrative sites and campgrounds.

Alternative 3: Treatment of Invasive Species without Synthetic Herbicides. Under this alternative, which proposes the same dual approach as Alternative 2, no synthetic herbicides would be used to treat invasive species. The methods proposed rely on aggressive manual or mechanical treatments as the first course of control. Natural weed-killers would be applied when manual and mechanical methods are ineffective.

Rationale for Deciding to Take Action and Selecting Alternative 2

The design, analysis and implementation of this Project occur in the context of a multiple-use framework described in the 2006 Forest Plan. In addition to planning for resource protection, we considered the interests of all types of Forest users during Project analysis. We developed the selected alternative to address the threat posed by invasive plants, and incorporated numerous safeguards (in addition to those already required by other laws) to avoid any significant adverse effect.

Our responsibility to provide for the multiple use of forest resources, while at the same time pursuing resource conservation, protection and preservation, present a considerable management challenge. In order to meet our responsibility, we reached out in collaboration to resource experts with other agencies and organizations to learn about the successes and difficulties of invasive plant management from others who are performing activities similar to what we have proposed. In developing alternatives, we have had to balance diverse interests and consider the insights of those who have already made significant progress in reducing the adverse effects of invasive plants, especially with regard to natural areas.

This Project enjoys a broad range of public support, as well as the endorsement of state agencies, local partnerships and well-established national environmental organizations. Among the statements of support and endorsement:

> **The Illinois Department of Natural Resources:**
> (We) continue to be supportive of the re-introduction of prescribed fire on the Shawnee as a management tool…The Department also supports the invasive species control approach proposed in the EA…The approach is based upon sound science and management principles… A combination of mechanical and chemical treatments is often necessary for control as many of the invasive species that

are present in southern Illinois cannot be adequately controlled using mechanical means alone… Effective control (of invasive species) on the Shawnee National Forest is vital to conservation efforts in southern Illinois and will directly benefit adjacent state and private lands… The IDNR agrees with the emphasis the Shawnee National Forest places on natural area management… Controlling invasive species in natural areas… will help protect these remnants of high-quality native communities that are home to many rare, threatened, or endangered species.

The Illinois Nature Preserves Commission:
(We have) been managing natural areas using the same techniques as proposed for 25 years and found them successful in protecting natural areas with sensitive plant species in Illinois.

The Midwest Invasive Plant Network:
(We applaud) the Shawnee National Forest for being willing to take decisive action and encourages the Forest to carry out the proposed measures to control invasive species on their lands… The actions proposed in the EA are the appropriate and safe measures needed to tackle the serious problem of invasive species. The other alternatives in the EA are not sufficient to prevent the continued spread of invasive species and subsequent degradation of the natural ecosystems which they invade… The USDA Forest Service is called upon to control invasive species on their lands within their mission statement ('to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations') and through the directive set forth in Executive Order 13112.

The Southern Chapter of the Illinois Native Plant Society:
(We support) the actions proposed in this EA and thank the Shawnee National Forest for continuing to prioritize, protect, and manage their natural areas and native plants… Managing natural areas and controlling invasive species not only benefits the Shawnee National Forest, but benefits the entire southern Illinois region as well. The proposed actions in the EA are needed to achieve these benefits. These methods are well-tested, not excessive, and would not pose a threat to the local environment.

The Nature Conservancy fully supports the (the Forest's proposal)… The Nature Conservancy considers invasive exotic species to be second only to habitat loss as the leading threat to imperiled and endangered plants and animals in the United States and around the world. In partnership with the IDNR, the Conservancy employs an invasive species strike team to manage critical natural areas in… southern Illinois… It is our experience that using herbicides is the most responsible and appropriate approach for eradication of initial infestations of invasive species and using prescribed fire and herbicides in combination is the most cost-efficient and appropriate approach for long-term control of infestations…

There is significant public interest in moving forward at this time to address the threat posed by invasive plants on the Forest.

The best available field data shows that invasive plants infest approximately 4,200 acres on the Forest. Of that area, this Project proposed to address the most serious threats to sensitive and rare plant species found in natural areas by treating a maximum of 2,500 acres per year for up to 10 years (this maximum includes areas that need re-treatment in successive years). Under the no-action alternative, it would be impossible to annually treat 2,500 acres; funds and personnel for this work simply are not available. After taking a hard look at our past ineffective management approach, we rejected the no-action alternative as ineffective at meeting the purpose and need of taking action.

The no-action alternative is neither feasible nor practical, given the documented annual expansion of invasive plants. A risk of accelerated expansion of invasives under the no-action alternative is neither speculative nor unforeseeable, as the number, location and size of invasive species-infested areas increases

annually. There is significant risk of expansion into new areas under the no-action alternative. For some invasive plants, e.g., kudzu, manual treatments only remove the ground shoot, leaving in the soil the perennial rhizomes and roots from which multiple new shoots sprout, thereby increasing the density of the infestation. Overall, taking no action increases the risk to the environment.

In the long term, the no-action alternative will make it more likely that invasive plants will be established throughout the natural areas. Prudent, cautious action taken now using low volumes of herbicides applied to relatively small areas would result in fewer direct, indirect and cumulative effects compared to larger volumes of herbicide that would be needed on the same infestations if allowed to grow and spread following a delay in response. Herbicide treatments are a feasible, effective way to accomplish the purpose and need.

The severity of the invasives problem affecting our natural areas and the need to address infestations of the four priority species identified in the environmental assessment indicate the necessity of our turning to herbicides to aid in the control of invasive species.

Public Involvement

As described in the Background, the need for this action has been identified over the last few years. A proposal to manage invasive species was listed in the Forest's Schedule of Proposed Actions on April 1, 2008 and has appeared in the schedule since then. The proposal was sent to the public and other agencies for scoping on April 29, 2008. The Forest hosted an informational open-house meeting on September 15, 2010. Twelve scoping responses were received. The interdisciplinary team analyzed the responses in order to identify issues (page 3).

In response to the environmental assessment published in 2011, we received comments from 35 individuals and governmental and non-governmental organizations, as well as three form letters. We received positive, supportive endorsements of our proposal from the IDNR, the Illinois Nature Preserves Commission, the Illinois Invasive Species Plant Council, the River-to-River Cooperative Weed Management Area, The Nature Conservancy and several individuals. Some individuals, organizations and the form letters expressed concern and opposition.

Following the May, 2011 publication of the Decision Notice and Finding of No Significant Impact, we received two appeals of the decision. After review of the appeals and consideration of the issues raised, the Responsible Official decided to withdraw his decision and revise the environmental assessment. This decision is the based on that revised environmental assessment.

Finding of No Significant Impact

After considering the environmental effects described in the revised environmental assessment, I have determined that implementation of our proposal will not have a significant effect on the quality of the human environment, considering the context and intensity of impacts (40 CFR 1508.27). Therefore, an environmental impact statement will not be prepared. I base my finding on the following consideration of context and intensity:

The context here is the limited, focused use of specified methods to address an altered condition of the natural environment—invasive species—in specific areas of the Forest identified in the environmental assessment and on maps in the project record. The trade-offs between the action and no-action alternatives are stark and clear. This action sets no precedent for any other Forest Service unit, nor does it establish precedent for any other action on the Forest. Future efforts to address invasive species, if any, will be subject to additional site-specific analysis with public participation.

From the outset, we recognized that the effects of invasive species on native plants and animals are a broad, national problem on private, state, and federal lands. The circumstances on the Forest are a microcosm of a national problem. The purpose and need for this action is local and limited in time and scope. We are committed to working with state agencies and local southern Illinois landowners to do what we can at this time with available resources to address the altered condition of the environment, particularly where diversity is threatened, as in natural areas. The context of this proposal is the targeted action on four highly invasive species of importance to this Forest at this time and 23 natural areas and their treatment zones.

My examination of the intensity of expected impacts focused on the ten intensity factors put forth for consideration by the Council on Environmental Quality:

1. *Impacts that may be both beneficial and adverse. A significant effect may exist even if on balance the effect will be beneficial.*

   My finding of no significant environmenal effects is not biased by the beneficial effects of the action: The mitigation measures and design criteria incorporated into this project were explicitly created to avoid significant direct, indirect and cumulative effects on non-target wildlife and plant species, as well as people. The beneficial effects associated with the control or elimination of highly invasive species and invasives from natural areas and their treatment zones are documented in the revised environmental assessment, but were not used to offset adverse effects.

2. *The degree to which the proposed action affects public health or safety.*

   My finding of no significant environmental effects is based on the analysis of the proposed project in the environmental assessment. The potential effects of the proposed action on human health were among the key issues identified by the interdisciplinary team and the team took a hard look at the possible effects on people. The analysis determined there would be no adverse impacts on human health or safety from implementation of the project in compliance with the project design criteria for human health and safety (EA page 20).

3. *Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*

   My finding takes into account all the unique characteristics of the Forest, with particular attention to designated natural areas. One of the main purposes of the proposed action is to protect the unique ecological characteristics of natural areas from the damaging effects of invasive species. I find that the selected alternative—the proposed action—will accomplish the intended purpose of managing or controlling invasive species to the benefit of the natural areas and the health and biodiversity of our forested ecological communities. Additionally, as was determined in the environmental assessment, the activities we plan to implement in accordance with the project design criteria will have no significant adverse effect on our candidate wild and scenic rivers, wetlands, or heritage resources (EA pages 18-20).

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*

   My finding relies on the determination in the environmental assessment that implementation of the selected alternative will have no adverse effect, much less a significant effect, on the quality of the human environment. The analysis that led to this determination was informed by human health and ecological risk assessments of the herbicides proposed for use. These risk assessments indicated low toxicity and minimal persistence levels for the proposed herbicides. Although some who commented on the environmental assessment felt that any use of herbicides on the Forest is

controversial in and of itself, no evidence was brought to our attention to question or disprove the conclusions of the environmental assessment or the risk assessments. I find no indication of a scientific controversy regarding the use of herbicides or other treatment methods that have been proposed (EA pages 26-60).

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

   Based on the discussions and conclusions of the analysis in the environmental assessment, I discern no uncertainty or unique or unknown risks associated with this proposed project. The proposed treatment methods, including the use of herbicides, are commonly and successfully employed in southern Illinois and across the country, including by the Illinois Department of Natural Resources and The Nature Conservancy. The proposed herbicides are of low toxicity and persistence; any risk associated with their use would be minimal. Implementation of the selected alternative according to the project design criteria minimizes the already low risk involved with the proposed activities and will have no significant adverse effect on the environment (EA pages 26-60).

6. *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

   The proposed action focuses on the use of common mechanical and herbicide treatments on clearly defined areas of the Forest. My decision applies only to the areas described in the environmental assessment and associated maps. Any additional future actions regarding the treatment of invasive species would be appropriately analyzed under the National Environmental Policy Act. My decision to implement this proposal is limited to this action and unrelated to future considerations (EA pages 9-15, 26-60).

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.*

   My finding of no significant impact from implementation of the selected alternative includes consideration of its cumulative impacts in relationship to other activities, whether conducted by the Forest Service or others. All known actions associated with the selected alternative that are likely to occur in the reasonably foreseeable future have been identified and the direct, indirect and cumulative effects disclosed in the environmental assessment (EA pages 27-43, 44-51, 52-58). Both the characteristics of the herbicides analyzed and project design criteria ensure that any direct and indirect effects from implementing this proposal will be minimal. The incremental effects this project would add to the effects of past, present and future actions are, therefore, small and limited in duration. Our description of the minimal cumulative effects we expect from implementing this action is supported by a robust analysis grounded in the best scientific and field data available. There is minimal possibility of any unexpected cumulative effects that could present a serious risk of significant adverse impacts.

   The treatments authorized by this decision are similar to, or involve less herbicide use than, projects already being successfully implemented by other governmental and private entities in southern Illinois and surrounding areas. There is no scientific information, field data, or other evidence that suggests the effects of this Project would differ from, or be more adverse than, those encountered during implementation of these similar projects.

We incorporated monitoring as an integral part of implementing the Project, but there is a very low likelihood that project monitoring will reveal any unexpected, significantly adverse cumulative effect. The Forest Service has experience on this Forest and others regarding safe herbicide application, which supports the finding of no significantly adverse cumulative effects. No one has presented evidence or examples of herbicide use in central-hardwood forests that have resulted in significant cumulative adverse effects.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

   Implementation of the action as proposed will have no adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places because:

   - 1) Areas to which we will apply prescribed fire are inventoried according to a programmatic agreement among the Forest, the Illinois State Historic Preservation Officer and the Advisory Council on Historic Preservation;
   - 2) Areas to be treated with earth-disturbing activities will be reviewed and inventoried prior to execution of activities; and
   - 3) non-earth–disturbing activities will have no effect on heritage resources (EA page 58).

   The State Historic Preservation Officer has been consulted regarding this project and has concurred with our conclusion that its implementation would have no effect on heritage resources.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

   The protection of threatened, endangered and sensitive species was a major consideration during our environmental analysis of the proposed action. My finding of no significant impact relies on the conclusion of the environmental assessment that implementation of the project design criteria will be protective. In December, 2010 the U.S. Fish and Wildlife Service concurred with the conclusion of our biological evaluation of the proposal that Implementation "may affect but (is) not likely to adversely affect" Indiana or gray bats and would have no effect on any other listed species.

Following the May, 2011 publication of the Decision Notice and Finding of No Significant Impact, we received two appeals of the decision. After review of the appeals and consideration of the issues raised, the Responsible Official decided to withdraw his decision and revise the environmental assessment. This document is the result of that decision.

10. *Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.*

    Implementation of the selected alternative will result in no action that would violate federal, state, or local laws or requirements for the protection of the environment. We considered applicable laws and regulations in the environmental assessment (EA pages 59-60) and the proposed action is consistent with the Shawnee National Forest Land and Resource Management Plan (EA page 60).

Findings Required by Other Laws and Regulations

My decision is in accordance with the Forest Plan's long term goals and objectives and the proposed project is consistent with Plan standards and guidelines (16 USC 1604(i)). The foundation of this analysis is the compilation and review of published science concerning treatment of invasive plant species. In addition, the Forest contacted other national forests as well as state and non-governmental experts to discuss invasive

plant species management. No scientific information presented to the agency by the public was overlooked or ignored. The best available science was used in the development of this analysis.

Implementation Date

If no appeals are filed within the 45-day time period, implementation of the decision may occur on, but not before, five business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal disposition.

Administrative Review or Appeal Opportunities

This decision is subject to administrative review (appeal) pursuant to 36 CFR Part 215.11. Written appeals must be filed within 45 days from the publication date of the legal notice of this decision in the *Southern Illinoisan*, the Forest's newspaper of record. Attachments received after the 45-day appeal period will not be considered. The publication date of this notice in the *Southern Illinoisan* is the exclusive means for calculating the time to file an appeal. The day after the publication of the legal notice of the decision is the first day of the appeal-filing period. Those wishing to appeal this decision should not rely upon dates or timeframe information provided by any other source.

Appeals may be submitted by mail to:

USDA Forest Service, Eastern Region
ATTN: Appeals Deciding Officer Regional Forester
626 E. Wisconsin Ave., Suite 700
Milwaukee, WI 53202-4616

Appeals submitted by electronic mail must be submitted in a format such as plain text (.txt), rich text (.rtf), or Word (.doc) to: appeals-eastern-shawnee@fs.fed.us, subject: Shawnee Invasives. Appeals may be sent by fax to: (414) 944-3963, Attn: Appeal Deciding Officer Regional Forester, subject: Shawnee Invasives. Normal business hours for those submitting hand-delivered appeals are 7:30 am-4:00 pm CST, Monday through Friday. Individuals or organizations who submitted substantive comments during the comment period specified at 215.6 may appeal this decision. The notice of appeal must meet the appeal content requirements at 36 CFR 215.14.

Contact

For additional information concerning this decision or the Forest Service appeal process, contact Richard Blume-Weaver, Planning and Resources Staff Officer, Shawnee National Forest, 50 Highway 145 South, Harrisburg, Illinois; phone (618) 253-1018; email rblume-weaver@fs.fed.us.

/s/ Tim Pohlman — 18 January 2013

TIMOTHY POHLMAN — Date
Forest District Ranger
Shawnee National Forest